9th Yazd International Congress and Student Award on Reproductive Medicine with 4th Congress of Reproductive Genetics

Key Lectures

K-15
Microfluidics in stem cells studies: Applications in reproductive sciences

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Microfluidics is revolutionizing biology and medicine and over the past two decades, their applications are constantly growing. Stem cell studies are one of the most important applications of microfluidics since they can have the variety of advantages over conventional stem cell studies. Microfluidics devices are enabling us to closely monitor the stem cells even in single-cell studies to analyse their metabolism and secretions. In addition, it is possible to stimulate cells with chemical, biological, physical, and mechanical simulates and evaluating the differentiation, reprogramming and performing physiological, immunological, and morphological studies. Moreover, they can be used to co-culture different cells together yet in two separate chambers, study organoids, and other 3D culture applications. Plus, the chance of contamination and cross-contamination is very low because they are sealed in the microfluidics channels and chambers. Cell sorting applications of microfluidics are also a great opportunity for scientists to separate specific stem cells from human sample cells. Last but not least, a very innovative application of microfluidics in medicine named organ-on-a-chip devices that can mimic a human organ can benefit from using stem cells.